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Relativistic Orbits in a Keplerian Limit ANTONIO MONDRAGON, Colorado College — An approximate closed-form solution to the relativistic central-mass problem in a Keplerian limit is presented. This solution is limited to describing approximately elliptical (Keplerian) orbits, and provides orbital characteristics as relativistic corrections to the Keplerian orbits of classical mechanics. It is emphasized that (Schwarzschild) geometry alone predicts deviations from classical orbits, including precession, reduced radial coordinate, and increased eccentricity. The predicted rate of precession is in agreement with the established result, correctly describing precession of perihelia of the inner planets. Relativistic corrections to the radial coordinate and eccentricity are of the same order of magnitude as the rate of precession and may provide further verifications of general relativity. The results may also be applied to isolated binary systems.

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